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Utility Patent  
Ser. No. 10/527,966

REMARKS / ARGUMENTS

Reconsideration of the application as amended is respectfully requested.

Before entry of the present amendment, Claims 1-3 were pending. Claim 1 and 3 were objected because of informalities. Claim 1 has been amended to remove the lack of antecedent basis, and in order to make a claim 3 more precise or understandable "the curves" was substituted by "said radiation spectra" and term "isothermal luminescence" substitute by simple "luminescence".

Further, claim 1 was rejected under 35 U.S.C. 102(b) as being clearly anticipated by LOWRY (USPN 5,683,179). However, applicant wishes to clarify that the patent of LOWRY can not be considered as the source relevant to given patent application at all while given application and patent of LOWRY have different objects of invention.

The Lowry patent clearly relates to "...apparatus and methods for protecting superconducting devices" (s. column 1, lines 8-9 in "1. Field of Invention") while given patent application relates to "Analysis of structures of surface and near surface layers of solids.." (s. "Field of Invention" in patent disclosure). In patent of LOWRY, classic and well-known effect of Thermoluminescence is applied in fact to construct detector, which serves just as a thermometer to detect temperature of attached superconductor surface at low temperature range. It is not the aim of LOWRY to reveal any structure of luminescenting (irradiating) body ("sensor" at Fig. 1 in LOWRY patent) itself. Moreover LOWRY clearly states that this luminescent "...quenching sensor includes a preselected thermoluminescent material..." (column 3, lines 23, 24 in "Summary of the invention") i.e. luminescenting material and its thermoluminescent properties

should be well-known and at no case the aim of device is to recognize the structure of that sensor.

Further, the examiner states that regarding claim 1, "LOWRY teaches a device and method of operation for investigating the properties of sample comprising a superconductor..." However, in respect to luminescent sensor LOWRY describes classical Thermoluminescent device where activating radiation comes through the WHOLE VOLUME of said cooled sensor, and activates this VOLUME which under heating from monitored superconductor is heated and changed luminescence.

One can see it clearly at all pictures of LOWRY patent where one surface of sensor which analyzes the temperature of semiconductor, is adjusted (attached) to the body of semiconductor while activation energy is coming to luminescent sensor always from the BACK side. LOWRY used constantly pulsed activation irradiation (as a rule light) to monitor the superconductor over long time. It is no novelty in this method and device at all. The novelty of LOWRY invention lies in application of such sensor to monitor superconductor state.

The novelty of present patent application consists in a very special activation method where only surface layer of solid to be analyzed is activated by very soft and short SINGLE pulse of activating irradiation, which cannot penetrate deep in the volume. Accordingly active (irradiating) sites appear ONLY in surface layer and thus only this layer irradiates luminescent quanta, which give information about surface state. The whole novelty of given patent application is to teach:

- how to activate surface sufficiently to perform analysis and accordingly to get information only from surface layer but not from the bulk.
- how to approach it without noticeable distortion of surface structure to be analyzed by activating irradiation.

Consequently, the applicant submits that rejection of Claim 1 under 35 U.S.C. 102(b) is improper

Finally, claim 2 was rejected under 35 U.S.C. 103(a) as being unpatentable over LOWRY. In undertaking a determination of whether a reference, or a combination of references, renders a claim(s) obvious under 35 U.S.C. § 103(a), the examiner must show that the reference or combination of references teach or suggest every element of the claim(s) in question. MPEP § 706.02(j). There is no such teaching or suggestion among these references. Applicant believes that Claim 2 cannot be rejected under 35 U.S.C. 103 (a) as being unpatentable over Lowry (USPN 5,683,179) because, as explained above, whole patent of LOWRY is not relevant to given patent application. LOWRY does not teach all the required method steps recited. All the people who want to observe thermoluminescence are operating basically in the same way – cool sample, activate it and then heat with detection of irradiated luminescent quanta. However itself these basic steps are not the subject of both invention of LOWRY and of given patent application. LOWRY fails to teach the use of an irradiation pulse which has a power from  $10^{-5}$  to  $10^{-3}$  Watts per square centimeter. LOWRY, indeed, fails to teach that because his invention is made in another area. For given patent application however this interval plays principal role because within this power interval, which can not be predicted by any person skilled in the art, we can approach sufficient activation of only surface layer of different solids without distortion of its

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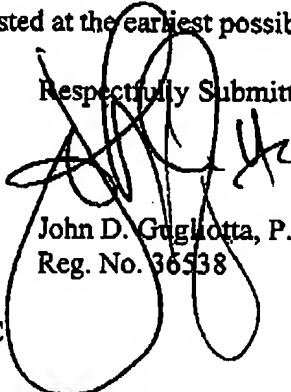
structure which is object of analytical method according to given application.

Further, the examiner indicates that the irradiation means of LOWRY is pulsed, activates the surface layer, and has a power output over a given area, which may be measured. While such could be theoretically measured, such a measurement was not done because it is not important for purposes of LOWRY invention.

Further still, the examiner felt that it would be "obvious to one having ordinary skill in the art... to be in range of  $10^{-5}$  to  $10^{-3}$  Watts per square centimeter..." In addition to the answer above, it was not possible to anybody skilled in the art to predict such interval, which is appropriate for the most of different solids in respect to criteria mentioned above. Further, and in addition, CONTINUOUS PULSED irradiation has nothing to do with single PULSE of irradiation (chosen in given invention to avoid destruction of analyzed surface layer).

Therefore, in view of foregoing amendments and clarifications, the applicant submits that allowance of the present application and all remaining claims, as amended, is in order and a formal Notice of Allowance is respectfully requested at the earliest possible date.

Respectfully Submitted,

  
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